Remarks:

Claims 1-2, 5-18, 20-24, 26-29, 31-39, 41-45, 47-53, and 55-56 remain for consideration in this application. No claims have been amended with this filing.

The Applicants would like to thank the Examiner for her time during a phone interview on May 21, 2007. During that interview, the Applicants noted the inconsistencies between the Office Action Summary Sheet, which called the action "non-final," and paragraph 13, which called the action "final." The Examiner stated that paragraph 13 was incorrect, and that the Patent Office considered the May 21, 2007 Office Action to be non-final.

The Applicants and the Examiner also discussed the rejection against claims 16-18, 21-23, and 48-49 as being anticipated by U.S. Patent No. 6,670,425 to Puligadda et al. (see paragraph 9 of the Office Action). This rejection has been made repeatedly against these claims in spite of the Applicants amending the claims to include the limitations of claims not previously rejected by the Puligadda et al. patent. This was done early in the prosecution of this application, and it has appeared that the original rejection has just been copied over and over without noting that the amendment to overcome Puligadda et al. was made, and without explaining why those limitations were no longer considered patentable over Puligadda et al. The Examiner agreed that she would look at Puligadda et al. again in light of this amendment and, if that amendment did not overcome Puligadda et al, she would specifically explain why it did not overcome Puligadda et al.

To summarize the history on this issue, in response to an Amendment After Final Rejection filed on September 27, 2006, the Examiner mailed an Advisory Action October 12, 2006. In that Advisory Action, the Examiner indicated that the rejection over the Puligadda et al. reference was potentially overcome with the amendment to claims 16 and 48. Therefore, in the Amendment filed on January 25, 2007, the Applicants requested that the Examiner withdraw the rejections predicated upon Puligadda et al. for the reasons set forth in the June 20, 2006 amendment as well as the September 27, 2006 Amendment After Final Rejection. That is, claims 16 and 48 were amended to include the limitation of claim 19, and claim 19 was not previously rejected in light of the Puligadda et al. patent. It makes sense that now-canceled claim 19 was not rejected upon the basis of the Puligadda et al. patent because that reference does not teach the claimed structure. Thus, these claims cannot be anticipated by Puligadda et al. Furthermore, there is no teaching or suggestion to make this modification. It is respectfully requested that all rejections predicated upon the Puligadda et al. patent be withdrawn, and it is believed the Examiner will agree with this position in light of her comments in the October 12, 2006 Advisory Action and during the interview of May 21, 2007.

The remaining issues discussed during the May 21, 2007 interview were the rejections raised by the Examiner under 35 U.S.C. § 112, first paragraph, against all of the claims. In the last response, the Applicants added the language "non-polymeric" to the claims. The Examiner raised issues with this language, both on the basis of failing to comply with the written description requirement and for not being enabled. An agreement was not reached on this point during the phone interview. The Applicants disagree with the Examiner's position on the alleged failure to comply with the written description requirements. Furthermore, the Applicants disagree with, and do not understand, the Examiner's position on enablement.

Beginning with the rejection for failing to comply with the written description requirements, the Examiner stated that:

> The Abstract and the paragraph bridging pages 1 and 2, suggest that high molecular weight polymers are problematic in anti-reflective coatings and there is a need for low molecular weight compounds. Therefore Examiner has interpreted the presently claimed components to be polymeric but of low molecular weight. Further, there is no teaching in the specification as originally filed for "non-polymeric" compounds.

Office Action, paragraph 7.

It is simply not reasonable to interpret these sections as suggested by the Examiner. Looking to the Abstract as cited by the Examiner, the sentence actually states, "Novel anti-reflective coatings comprising small molecules (e.g., less than about 5,000 g/mole) *in lieu of high molecular weight polymers* and methods of using those coatings are provided." (emphasis added) The paragraph bridging pages 1 and 2 and the paragraph immediately after that paragraph state:

> Prior art anti-reflective coating layers contain a polymeric resin with a light-absorbing chromophore either attached to, or blended with, the resin. Although high optical densities enable these polymers to provide effective reflectivity control, they also have numerous drawbacks. For example, these polymers have high molecular weights which cause problems during polymer blending. More particularly, the use of these polymers inhibits customization of the anti-reflective coating to the photoresist being utilized in the particular photolithographic process. Customization is extremely important because it allows for straighter profiles and better adhesion of the photoresist to the anti-reflective coating, thus resulting in better performance.
>
> There is a need for new anti-reflective coatings which minimize or avoid the problems associated with prior art polymeric anti-reflective coatings.

The above language cannot reasonably lead to an interpretation that there is support only for polymeric components of a low molecular weight as asserted by the Examiner. Rather, both quoted sections would lead one of ordinary skill in the art to the opposite interpretation. The above would lead one of ordinary skill in the art to understand that low molecular weight compounds that are not polymers (i.e., non-polymeric) would be used in the present invention. The Abstract specifically states (as shown above) that small molecules are used *in lieu of high molecular weight polymers*.

The Examiner has selectively taken the "high molecular weight" portion of the italicized language and has left the "polymers" language of that same italicized text in order to arrive at support for her position, and this is improper. If small polymers had been intended to be included in this sentence, the Applicants would have said "small polymers are used in lieu of high molecular weight polymers." This would have made it clear that the present invention used polymers. However, this was not intended.

With respect to the language bridging paragraphs 1 and 2 of the specification, the Applicants cannot even begin to formulate an interpretation that would support the Examiner's position. The overall teaching of this section is clearly to show that polymers are not desired by the inventors of the present application. This section discusses the problems with prior art polymers in general, and does nothing to suggest that the present invention is concerned with low molecular weight polymers.

The Applicants have pointed to several locations in the specification that provide support for "non-polymeric." Page 1, line 13 references the use of "low molecular weight core molecules in lieu of polymeric resin binders." Page 2, lines 17-19 state, "These low molecular weight components are used in lieu of the polymeric resins typically present in anti-reflective coatings, thus avoiding the problems typically associated with polymer blending." This same paragraph also describes the percentage of components in the composition that have the low molecular weight of less than 1,000 g per mole. It is clear that these components are not polymers.

The general description of the preferred types of cores molecules found on page 2, line 20 through page 5 further demonstrates the fact that the core molecules of the invention are non-polymeric, because they include groups radiating from a central core rather than the linking of monomeric repeat units as would be the case with a polymer. The data provided in the Examples section of the application also uses only non-polymeric compounds. In fact, every single example given in the application (be it data or exemplary lists of compounds) is a non-polymeric compound. The Applicants clearly taught that the compounds used in the invention were to be used in lieu of polymers. "Non-polymeric" is simply another way of stating the same thing: something other than a polymer.

It is not required that the specification have the exact phrase "non-polymeric" for there to be support for this language. Rather, it is enough that the concept of "non-polymeric" was present in the application as filed. *Application of Anderson*, 471 F.2d 1237 (CCPA 1973). In *Anderson*, the invention was concerned with a surgical dressing that is absorbable in the body. *Id.* at 1238. Claim 2 of the *Anderson* application was filed as:

> 2. A laminated dressing as described in claim 1, the primary layer containing a medicant.
>
> *Id.* at 1244.
>
> Claim 2 was later amended as follows:
>
> 2. A laminated dressing as described in claim 1, the primary layer ~~containing~~ carrying a medicant.
>
> *Id.*

The Examiner raised a new matter rejection against the claim, and the Patent Office Board of Appeals affirmed this decision, noting that the term "carrying" was not in the specification as filed. *Id.* The Court stated that it was true the term "carrying" did not appear in the specification, but instead included language that "the primary layer may be 'formulated with' medicaments and that

that layer 'can serve as a vehicle for medication, released upon dissolution in the plasma.'" *Id.* The Court held:

> The question, as we view it, is not whether "carrying" was a word used in the specification as filed but whether there is support in the specification for employment of the term in a claim; is the concept of carrying present in the original disclosure?

Id. The Court found that this concept was in the original disclosure by virtue of the teaching of the primary layer as a "vehicle." *Id.* The Court stated that this was "quite sufficient" support, and overturned the rejection. *Id.*

The same would hold true when applying the law of *Anderson* to the present facts. The question is not whether "non-polymeric" was a phrase used in the specification as filed, but whether there is support in the specification for the concept of non-polymeric. Clearly, there was support for this concept and, in fact, the entire teaching of the specification focuses on the use of a compound other than (i.e., "in lieu of") a polymer in an anti-reflective composition. Again, Applicants direct the Examiner's attention to each of the sections cited above for specific examples of the teaching of this concept in the application.

The Federal Circuit has found similarly in *In re Wright*, 866 F.2d 422 (Fed. Cir. 1989). In *Wright*, the invention was concerned with methods of using free flowing, photosensitive microcapsules. *Id.* at 423. The Applicant amended claim 1 to add the language that is underlined in the following quote:

> said microcapsules being in the form of a free-flowing powder which is distributed upon said support but not permanently fixed thereto, said microcapsules comprising . . .

Id. The Examiner raised a § 112 rejection, finding that the words "not permanently fixed" did not appear in the disclosure as originally filed. *Id.* The Board of Patent Appeals and Interferences affirmed this finding. *Id.* The Federal Circuit cited an earlier CCPA decision to state:

> "the claimed subject matter need not be described in haec verba in the specification in order for that specification to satisfy the description requirement." The fact, therefore, that the exact words here in question, "not permanently fixed," are not in the specification is not important.

Id. at 425 (citing, *In re Smith*, 481 F.2d 910, 914 (CCPA 1973)). The Court instead looked at "the essence of the original disclosure" to find that there was support for "not permanently fixed," and that the § 112 rejection was in error because the Applicant complied with the written description requirements. *Id.*

Again, application of the law in *Wright* to the present facts shows that the present rejection for failing to meet the written description requirement is in error. Although the exact phrase "non-polymeric" is not found "in haec verba" in the application, it is clearly the essence of the original disclosure that the low molecular weight compounds used are not polymers. They are used in lieu of polymers and are clearly non-polymeric. Thus, it is respectfully submitted that the rejection under 35 U.S.C. § 112, first paragraph, for failing to comply with the written description requirement should be withdrawn.

As to the lack of enablement rejection also raised under 35 U.S.C § 112, first paragraph, the Applicants respectfully submit that this rejection is improper in the present circumstances. The Applicants suspect there is confusion on the part of the Examiner with respect to this rejection, and that suspicion seemed further supported by the May 21, 2007 interview, during which the Examiner could not give a clear basis for this rejection. She even said she might have meant to just assert "new matter," which is the rejection argued against in the preceding paragraphs. The Applicants suspect there was a belief on the part of the Examiner that a lack of enablement rejection must be raised because a lack of descriptive support rejection had been raised. However,

> the fact that an additional limitation to a claim may lack descriptive support in the disclosure as originally filed does not necessarily mean that the limitation is also not enabled. In other words, the statement of a new limitation in and of itself may enable one skilled in the art to make and use the claim containing that limitation even though that limitation may not be described in the original disclosure.

MPEP § 2164. (The Applicants are not conceding a lack of descriptive support by using this quotation; they stand by the arguments against this point as presented above.) Thus, just because the Examiner believes there to be a failure to comply with the written description requirement does not mean the Examiner is also required to make a lack of enablement rejection.

Even if the Examiner insists this rejection is still appropriate, the Applicants respectfully submit that the Examiner has not met her burden of establishing a *prima facie* case of a lack of enablement. MPEP 706.03(c) ¶ 7.31.02 sets forth the guidelines an Examiner should follow when making a rejection under 35 U.S.C. § 112, first paragraph, for a lack of enablement. Specifically, an Examiner should

> identify the claimed subject matter for which the specification is not enabling. Also explain why the specification is not enabling, applying the factors set forth in *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1998) as appropriate. See also MPEP § 2164.01(a) and § 2164.04. The explanation should include any questions the examiner may have asked which were not satisfactorily resolved and consequently raise doubt as to enablement.

MPEP 706.03(c) ¶ 7.31.02.

The only explanation for this rejection provided by the Examiner is lines 2-4 of paragraph 9 of the Office Action, which state, "because the specification, while being enabling for low molecular weight core molecules/components, *does not reasonably provide enablement for non-polymeric components*." (emphasis added) So, the Examiner has identified the claimed subject matter for which the specification is not enabling as "non-polymeric components." The Applicants respectfully submit that it is improper for the Examiner to require that the specification be enabling for all non-polymeric components as this is not consistent with the scope of the claims. That is, the claims recite more than simply "non-polymeric components." The claims recite either a non-polymeric compound having a chemical formula that fits within a claimed general formula (e.g., claim 16), or that at least about 95% of the components in the composition are non-polymeric and have a molecular weight of less than 1,000 g per mole of component (e.g., claim 1). The Applicants cannot be required to provide enablement for a scope that is broader than the claims. (Although the Applicants do note that the claims were broader than this prior to the addition of the phrase "non-polymeric," and yet the Examiner did not reject those broader claims as lacking enablement.)

The Examiner has not provided any explanation as to why the specification is not enabling, as is required by MPEP 706.03(c) ¶ 7.31.02. The Examiner has also failed to applied any of the *In re Wands* factors to the present claims, nor has she explained what questions she has that raise doubt as to enablement. Without such details from the Examiner, a *prima facie* case of lack of enablement is not established, and the Applicants are not able to formulate arguments against unknown reasoning. And even if the independent claims are not enabled in the Examiner's opinion, the Applicants do not understand how it could be that not a single one of the dependent claims are enabled. These dependent claims focus on preferred embodiments of the invention, and narrow the scope of the independent claims.

On pages 2-5 of the specification, the Applicants go into great detail about the inventive composition, including the types of compounds to be used in the composition, the quantities of the compounds, how the compositions are made, how they're used, and the properties of the cured composition. There is a large amount of direction provided by the Applicants in this specification. The Applicants also set forth five different examples describing the exact preparation of five different compositions according to the invention, so there is a good number of working examples. With this detailed level of content in the disclosure, very little experimentation (and certainly not undue experimentation) would be required by one having ordinary skill in this art to make or use the invention. To support this position, a Declaration signed by Dr. Charles J. Neef is provided with the filing. Dr. Neef provides written evidence of enablement by attesting to the fact that one of ordinary skill in the art would be able to practice the invention, without undue experimentation, commensurate to the scope of the claims in light of the teachings of the specification. In light of the foregoing, it is respectfully requested that the Examiner withdraw this rejection.

The Examiner has continued to reject all of the claims as being obvious in view of the combined teachings of U.S. Patent No. 6,316,165 to Pavelchek et al. and those of U.S. Patent No. 3,776,729 to Levy et al. It is believed that this rejection is being maintained because of issues raised by the Examiner with respect to the recitation of "non-polymeric." The non-polymeric limitation is clearly not taught by the Pavelchek et al. patent, which clearly contemplates the use of polymers rather than non-polymeric components as evidenced by the inclusion of a "resin binder component that contains a relatively low molecular weight polymer." (column 2 lines 16-17) This is quite clearly not "non-polymeric." Furthermore, the Levy et al. patent does not remedy the shortcomings of the Pavelchek et al. teachings. The use of the claimed non-polymeric compounds or components improves the fill properties of the composition while still providing a composition with superior etch rates, which is a distinct advantage over the prior art. It is respectfully submitted that this rejection should be withdrawn.

In view of the foregoing, it believed that no further issues remain with this application, and a Notice of Allowance is requested. Any additional fee which is due in connection with this amendment should be applied against Deposit Account No. 19-0522.

Respectfully submitted,

By Tracy Bornman

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Docket No.: 32850
NEEF et al.	Confirmation No.: 3997
Serial No.: 10/679,521	Group Art Unit No.: 1752
Filed: October 6, 2003	
BOTTOM ANTI-REFLECTIVE COATINGS DERIVED FROM SMALL CORE MOLECULES WITH MULTIPLE EPOXY MOIETIES	Examiner: Gilliam, Barbara Lee

Commissioner for Patents
Mail Stop Amendment
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

DECLARATION

I, Dr. Charles J. Neef, do state and declare as follows:

1. I am one of the inventors named on the above-referenced patent application. I have been employed by Brewer Science, Inc., for seven years, and I am currently a Scientist in the Sustaining Technology R&D Group.

2. I am providing this declaration in support of the above-referenced patent application. I have examined the claims as they presently stand, and have read the application as filed. The specification fully supports the claim scope, and one of ordinary skill in the art could practice the invention without undue experimentation. The specification teaches the types of compounds to be used, how to make them, how to make compositions including them, and how to use those compositions. There are also five specific compositions described using non-polymeric compounds. The specification repeatedly teaches the use of non-polymeric compounds.

3. The entire application teaches the use of compounds that are not polymers. The compounds used in the inventive compositions have functional groups radiating from a core moiety. These are not polymers. One of ordinary skill in the art understands a polymer to be a compound with repeat units that are arranged in a linear fashion, not radiating from a central core. U.S. Patent No. 6,316,165 to Pavelchek et al. clearly contemplates the use of polymers, while the present application clearly discloses the use of compounds other than polymers (i.e., non-polymeric).

4. I further declare that all statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that wilful, false statements and the like are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code, and such wilful false statements may jeopardize the validity of any patents issued from the patent application.

12 July 2007
Date

Charles Neef
Dr. Charles J. Neef